

Reply to Office Action dated December 2, 2009

REMARKS

Claims 9-13, 17-19 and 24 are pending in the application. By this Amendment, independent claim 9 is amended merely for clarity and claim 1 is canceled without prejudice or disclaimer.

Entry of the amendments is proper under 37 C.F.R. §1.116 because the amendment does not raise any new issues requiring further search and/or consideration. Entry is thus proper under 37 C.F.R. §1.116.

The Office Action rejects claims 9, 11-12, 17, 19 and 23 under 35 U.S.C. §103(a) over Embodiment 2 of Takayama in view of Embodiment 8 of Takayama and U.S. Patent Publication 2002/0075206 to Takeda. The Office Action also rejects claim 10 under 35 U.S.C. §103(a) over Embodiment 2 of Takayama in view of Embodiment 8 of Takayama, Takeda and U.S. Patent 6,747,614 to Takayama (hereafter Takayama 614). Still further, the Office Action rejects claim 13 under 35 U.S.C. §103(a) over Embodiment 2 of Takayama in view of Embodiment 8 of Takayama, Takeda and U.S. Patent Publication 2002/0033675 to Kang. The Office Action also rejects claims 18 and 24 under 35 U.S.C. §103(a) over Embodiment 2 of Takayama in view of Embodiment 8 of Takayama, Takeda and U.S. Patent Publication 2002/0063663 to Homma. The rejections are respectfully traversed with respect to the pending claims.

Independent claim 9 recites a plasma display panel (PDP) having scan electrodes and sustain electrodes to form a plurality of electrode pairs, and a first driving circuit that initializes discharge cells by applying a first signal having an initialing pulse to the scan electrodes during a reset period of at least one sub-field, the initialing pulse increasing to a first maximum voltage

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value, wherein the first signal further has a first decreasing pulse provided after the initialing pulse during the reset period of the at least one sub-field. Independent claim 9 also recites the first driving circuit applies a second signal having an enhancing pulse to the scan electrodes after applying the first signal in the reset period and before an address period of the at least one sub-field, wherein the second signal further has a second decreasing pulse provided after the enhancing pulse in the at least one-sub-field, the enhancing pulse increasing to a second maximum voltage value less than the first maximum voltage value. Still further, independent claim 9 also recites the first decreasing pulse is provided until a voltage provided to the scan electrodes reaches a first voltage value, and the second decreasing pulse is provided until the voltage provided to the scan electrodes reaches a second voltage value, wherein the first voltage value is different than the second voltage value. Independent claim 9 also recites that a ground voltage is applied to the sustain electrodes when the enhancing pulse is applied to the scan electrodes.

In at least one non-limiting example, the present specification describes that in a set-down interval, after a rising ramp waveform Ramp-up is supplied, a falling ramp waveform Ramp-down is applied to all the scan electrodes Y. The falling ramp waveform Ramp-down may cause a fine discharge within cells to uniformly leave wall charges within the cells.

In the enhancing period, a positive enhancing pulse Ramp-p is supplied that rises from a ground voltage GND until a set-up voltage V_{setup} . The enhancing pulse Ramp-p may cause a fine discharge such that desired wall charges can be formed at the discharge cells. Thereafter, a negative enhancing pulse, for example, greater than a falling ramp waveform (see dependent

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claim 10) may be supplied in the enhancing period. Thus, wall charges generated by the positive enhancing pulse Ramp-p are not erased.

The applied references do not teach or suggest all the features of independent claim 9. More specifically, the Office Action (on page 5) asserts that Takayama's FIG. 7 discloses a second decreasing pulse V3y provided after an enhancing pulse V2y. The Office Action also states that Takayama's FIG. 7 does not disclose the claimed first decreasing pulse provided after the initialing pulse V1y during the reset period. The Office Action then cites Takayama's FIG. 15 (Embodiment 8) as disclosing a decreasing pulse V22y after an initialing pulse (believed to be V21y) during a reset period of the at least one sub-field.

The Office Action cites FIGs. 7-8 as corresponding to Embodiment 2 and cites FIG. 15 as corresponding to Embodiment 8. For ease of description, the following description may refer to separate embodiments and/or references when discussing Embodiments 2 and 8.

The Office Action (on page 5) states that the motivation to modify Embodiment 2 with Embodiment 8 is for the purpose of precisely controlling discharge in a display to improve quality of the display and to minimize a number of times needed to do a refresh period. However, the alleged motivation is not based on prior art.

Takayama's FIG. 15 (Embodiment 8) specifically relates to an order for each of the electrodes to perform a charge forming and a charge adjusting. See Takayama's col. 14, lines 26-40. Takayama relies on three kinds of interelectodes XY, XA and YA for different combinations of charge forming and charge adjusting. Takayama applies the ramp waveform pulse to each electrode four times without changing the ramp waveforms. See Takayana's col. 14, lines 26-40.

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Accordingly, an alleged first decreasing pulse V22y is equal to an alleged second decreasing pulse V32y. Embodiment 8 teaches away from the claimed features that the first voltage value is different than the second voltage value.

Independent claim 9 recites that a first decreasing pulse is provided until a voltage provided to the scan electrodes reaches a first voltage (during the reset period) and a second decreasing pulse is provided until the voltage provided to the scan electrodes reaches a second voltage, and that the first voltage value is different than the second voltage value.

Based on this difference, Takayama's FIG. 7 (Embodiment 2) and FIG. 15 (Embodiment 8) may not be simply combined and/or modified as asserted in the Office Action. The Office Action clearly relies on impermissible hindsight to combine these two embodiments. FIG. 15 (Embodiment 8) also does not teach or suggest a second decreasing pulse is provided (after the enhancing pulse) until the voltage provided to the scan electrodes reaches a second voltage value (and that the first voltage value is different than the second voltage value), as recited in independent claim 9.

For at least these reasons, Embodiments 2 and 8 of Takayama does not teach or suggest all the features of independent claim 9. The Office Action (on page 6, lines 3-8) appears to agree that Takayama's Embodiments 2 and 8 do not teach or suggest by claimed first and second voltages. The Office Action states that Takeda's FIG. 5 discloses a first gradually falling waveform (A12) is provided until a voltage reaches a first voltage and that a second gradually falling waveform (A13) is provided until a voltage reaches a second voltage value, where the first and second voltages are different. The waveform provided in Takeda's FIG. 5 clearly differs

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from Embodiments 2 and 8 of Takayama. For example, portions A12, A13 of Takeda's FIG. 5 may not be simply exchanged with Embodiments 2 and 8 as alleged. The Office Action appears to rely on Takayama's V22y (FIG. 15) as corresponding to the claimed first decreasing pulse, and relies on Takayama's V3y (FIG. 7) as corresponding to the claimed second decreasing pulse. Takeda's portions A12 and A13 do not correspond to the V22y and V3y. The portions A12 and A13 may not be combined with FIG. 7 and FIG. 15 as alleged. The combination with Takeda is improper.

For at least these reasons, Embodiment 2, Embodiment 8 and Takeda do not teach or suggest all the features of independent claim 9. The other applied references do not teach or suggest the missing features of independent claim 9. Thus, independent claim 9 defines patentable subject matter.

Independent claim 19 recites providing a first signal including an initialing pulse followed by a first decreasing pulse to the scan electrode during an initialization period of at least one sub-field, and providing a second signal including an enhancing pulse followed by a second decreasing pulse to the scan electrode after providing the first signal and during the at least one sub-field, wherein a lowest voltage of the first decreasing pulse is less than a lowest voltage of the second decreasing pulse, wherein a ground voltage is provided to the sustain electrode when the second signal is provided to the scan electrode. Independent claim 19 also recites providing a scan signal to the scan electrode during an address period of the at least one sub-field, the scan signal being provided after the second signal in the at least one sub-field, providing at least one sustain signal to at least one of the scan electrode or the sustain electrode during a sustain period

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of the at least one sub-field. Independent claim 19 also recites that the initialing pulse of the first signal has a first peak voltage value, and the enhancing pulse of the second signal has a second peak voltage value, and wherein the first peak voltage value is greater than the second peak voltage value.

For at least similar reasons as set forth above, the applied references do not teach or suggest at least these features of independent claim 19. More specifically, Embodiment 2 of Takayama, Embodiment 8 of Takayama and Takeda (and the other applied references) do not teach or suggest providing a first signal including an initializing pulse followed by a first decreasing pulse, providing a second signal including an enhancing pulse followed by a second decreasing pulse to the scan electrode after providing the first signal, wherein a lowest voltage of the first decreasing pulse is less than a lowest voltage of the second decreasing pulse, wherein a ground voltage is provided to the sustain electrode when the second signal is provided to the scan electrode. The applied references/embodiments do not teach that a lowest voltage of the first decreasing pulse is less than a lowest voltage of the second decreasing pulse. Thus, independent claim 19 defines patentable subject matter.

For at least the reasons set forth above, each of independent claims 9 and 19 defines patentable subject matter. Each of the dependent claims depends from one of the independent claims and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims recite features that further and independently distinguish over the applied references.

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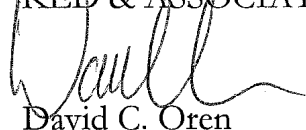
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CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 9-13, 17-19 and 24 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney at the telephone number listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

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